



School of

Engineering

EGR
Mercer University

Syllabus for *BME, ECE, EVE, IDM, ISE, MAE 487, ECE 485*
Engineering Design Exhibit I
Spring Semester 2016
Tuesday, Thursday 3:05PM
Room SEB 143

Instructor: Dr. Laura Moody, Associate Professor
Industrial Engineering & Industrial Management

Office: 201G, School of Engineering

Phone: 301-2349 (w)

Email: moody_le@mercer.edu

Textbooks and Supplies:

Required: None
Recommended: None

Web Sites: http://faculty.mercer.edu/moody_le/egr487.htm

Catalog Description:

Multi-disciplinary design projects with substantial specialty-specific content. Small groups design, build, and test realistic engineering systems under faculty supervision. Projects include safety, economic, environmental, and ethical considerations and require written and oral reports.

Course Objectives: Upon successful completion of this course, you should be able to do the following:

- Work in effectively in teams
- Determine realistic constraints
- Apply engineering skills to real problems
- Develop and evaluate solutions to complex problems
- Establish test plans
- Communicate effectively to technical and general audiences in both written and oral forms

Prerequisites: All 100- and 200-level engineering, mathematics, and science courses, TCO 341, and any specific specialization requirements.

Corequisites: As specified by specialization requirements.

Course Standards:

1. **Assignments are due at the beginning of the class period on the date due.** In an exceptional circumstance you may petition to hand in an assignment late. If granted, the grade will be reduced one letter grade per day late.
 2. **Attendance is required** due to the large amount of in-class work and team activities we will be doing. You can't "make up" experiential learning. Absences will result in grade penalties.
 3. **Grading** encompasses every aspect of the course, from participation through final products. You can assume that every task requested directly or indirectly factors into your grade. For example, **having your work prepared for your group is as important as having it ready for me.** Regular feedback will be given on documents handed in.
 4. You are encouraged to schedule a **conference** at any point that you need it.
 5. Please turn off or mute cell phones and other forms of electronic communication before entering the classroom.
 6. The **honor code** provisions as outlined in the *Bulletin* and in the student handbook, *The Lair*, will be assumed for everyone. It should be clear from class discussion which projects will be collaborative and which ones must be individual. When in doubt, please ask to avoid potentially embarrassing situations. Plagiarism is a violation of the honor code and is prohibited.
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1. Students requiring accommodations or modifications for a disability should inform the instructor at the close of the first class meeting or as soon as possible. The instructor will refer you to the ACCESS and Accommodation Office to document your disability, determine eligibility for accommodations under the ADA/Section 504 and to request a Faculty Accommodation Form. Disability accommodations or status will not be indicated on academic transcripts. In order to receive accommodations in a class, students with sensory, learning, psychological, physical or medical disabilities must provide their instructor with a Faculty Accommodation Form to sign. Students must return the signed form to the ACCESS Coordinator. A new form must be requested each semester. Students with a history of a disability perceived as having a disability or with a current disability who does not wish to use academic accommodations are also strongly encouraged to register with the ACCESS and Accommodation Office and request a Faculty Accommodation Form each semester. For further information, please contact Carole Burrowbridge, Director and ADA/504 Coordinator, at 301-2778 or visit the ACCESS and Accommodation Office website at <http://www.mercer.edu/disabilityservices>
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1. Any modifications to the syllabus or course schedule will be announced via email.

Electronic Communication:

Electronic communication is an important adjunct to face-to-face communication, including from professor to students, students to professor, and students to students. You must have regular access to your e-mail. Students are required to use their Mercer assigned e-mail address for all electronic communication. Access to the Web and to the Internet is also integral to the class work. A number of laboratories on campus will provide access.

ADMINISTRATIVE DETAILS

Course Outline:

<u>Week</u>	<u>Major Activity</u>
1	Gather information (client, faculty, library, WWW, etc.)
2	Write project proposal, start Thursday meetings.
3	Submit proposal on Tuesday, prepare for proposal presentation
3-4	Define feasibility and merit criteria.
4	Develop design alternatives.
4-7	Perform engineering analysis and cost analysis.
7	Apply feasibility and merit criteria – select best alternative.
8	Team presentations of status report
9-10	Refine design, prepare drawing.
11	Finalize drawings, written report – rehearse for PDR.
12	Make Preliminary Design Review presentation to faculty.*
13	Respond to requirements imposed at PDR.
14-15	Develop comprehensive test plan, order parts
16	Submit comprehensive test plan.

Grading: The following is used as a guideline for determining grades:

Proposal (written and oral)	10%
Professionalism.....	15%
Progress Reports, Schedule of Deliverable Attendance, Responsiveness, Ownership, Responsibility, Ethics	
Preliminary Design Review (PDR)	
Reporting	
Written	30%
Oral	10%
Engineering Content.....	25%
Quality/Merit	
Comprehensive/Quantity	
Accomplishment/Difficulty	
Test Plan	10%
Final Exam	-5 or 0%
Teamwork	+/- Adjustment

The above grading rubric assumes that all course requirements have been attempted in good faith. If any requirements are overlooked or disregarded, the instructors reserve the right to assess serious grade penalties.

Individual student grades for team assignments (Proposal, PDR, Test Plan) will be adjusted based on peer ratings of yourself and team members as well as teamwork evaluations from management, clients, and technical advisors. A grade of **incompletes (IC)** will be awarded only to design teams that experience extenuating circumstances during the term. Poor time management will not be considered a valid justification for the award of an **IC** grade.

Georgia Engineering Foundation Award: The senior design project judged as “best” by the School of Engineering faculty will receive an award at the Mercer University Awards Day Ceremony at the end of the school year which may be accompanied by a cash prize from the G.E.F.

Schedule

The course will adhere to the schedule in the following table. Any alterations to the schedule during the course of the semester will be communicated via email.

Date	Week	Weekday	Topic	Deliverable
12-Jan	1	Tues.	First day of class	
14-Jan		Thurs.	Scheduled group meetings	
19-Jan	2	Tues.	Project Management	
21-Jan		Thurs.	No class: work on Proposal	
26-Jan	3	Tues.	Design Processes	Proposals, Budget Form Due by COB (5:00 pm.)
28-Jan		Thurs.	Meet with client and technical advisors	Team Progress Report Due (email)
2-Feb	4	Tues.	Design Applications	
4-Feb		Thurs.	Management review meeting	
9-Feb	5	Tues.	Codes and Standards; Licensing and FE	
11-Feb		Thurs.	Management review meeting	Individual Progress Report Due (email)
16-Feb	6	Tues.	Analysis for Engineering Design	
18-Feb		Thurs.	Meet with client and technical advisors	Team Progress Report Due (email)
23-Feb	7	Tues.	Designing Written Reports	
25-Feb		Thurs.	Management review meeting	Individual Progress Report Due (email)
1-Mar	8	Tues.	Effective Oral Presentations	Journal/Patent Summaries Due
3-Mar		Thurs.	Meet with client and technical advisors	Team Progress Report Due (email)
8-Mar	9	Tues.	SPRING BREAK	
10-Mar		Thurs.	SPRING BREAK	
15-Mar	10	Tues.	No class	
17-Mar		Thurs.	Management review meeting	Individual Progress Report Due (email)
22-Mar	11	Tues.	No class	
24-Mar		Thurs.	Meet with client and technical advisors	Team Progress Report Due (email)
29-Mar	12	Tues.	Team Progress Report Presentations	
31-Mar		Thurs.	Management review meeting	Individual Progress Report Due (email)
5-Apr	13	Tues.	No Class - PDR week	
7-Apr		Thurs.	No Class - PDR week	Last Day for PDRs - Thursday, April 7
12-Apr	14	Tues.	Seminar-Test Plans	Respond to PDR comments
14-Apr		Thurs.	No class	
19-Apr	15	Tues.	Brief Class Meeting	Submit Comprehensive Test Plan
21-Apr		Thurs.	No class	
26-Apr	16	Tues.	No class	
28-Apr		Thurs.	No class	Final: Peer Evaluations Due

Deadlines:

COB, Tuesday, January 26 – Written proposals due/Project Proposal Description Form

COB, Feb 11, Feb 25, Mar 17, Mar 31 – Individual Progress Report detailing your deliverables

3:05pm, Tuesday, Mar 29 – Team status reports – 10-min. presentations to class

4pm, Thursday, April 7 – Latest time slot to present PDR

COB, Tuesday, April 19 – Test plans due

COB Apr. 28 - Final exam : Peer evaluations, course critique/evaluation

Project Status Memorandum:

Each team is required to submit a project status memorandum at each Thursday management meeting. Detail the status of accomplishments and plans for the next two weeks **with a table showing participating members, action items, deliverables, deadlines, and date completed**. Be prepared to consult with management about your plan of action.

Attendance: Attendance at the lectures and all other scheduled meetings is required; Absences will influence your course grade through a professionalism evaluation shown in the grading rubric above. Chronic absence may result in a grade of F. After the lecture and discussion portion of each regularly scheduled meeting, design teams are expected to use the remainder of the period to work on their projects.

Meetings: You are expected to meet frequently (at least bi-weekly) with both your principal evaluator and your technical advisor. You are also expected to keep your client informed about key details of the project. Make appointments for these sessions, prepare and present a brief oral progress report at each, and use the time profitably to ask questions, discuss alternatives, etc. Bring your project notebook to these meetings and be prepared to use the included materials.

Project Notebook: Each team should maintain a loose-leaf notebook which, by the end of XYZ 488, will contain a complete record of the team's efforts on this project. This record will be brought to each class attendance, each meeting with course instructors, and each meeting with the team's technical advisor or client. As a minimum, it will contain tabbed sections as follows:

Administrative Details (this guide, etc.)	Proposal
Ideas/Sketches/Engineering Drawings	Cost Analysis/Cost Records
Engineering Analysis	Preliminary Design Review
Timetable (PERT/CPM, Gantt, etc.)	Progress Reports
Test Plan/Test Results	Project Notes
References	Activities Logs

At the End: At the end of XYZ 487, each group must have a completed design or plan supported by appropriate analyses. That design or plan will be complete enough that it could be executed by anyone skilled in the appropriate technology. For example, the design of an artifact must include a **complete** set of drawings to include working drawings of all parts to be made, assembly drawings explaining how the parts go together, and a bill of materials describing what items to purchase before the parts can be made and assembled. If no such design or plan exists, the XYZ 487 effort is unsatisfactory.

Refer to your *Guide for XXX 487/488* for additional course details.